

CHECKLIST ENVIRONMENTAL ASSESSMENT

Proposed Action: Approve Drilling Permit (Form 22)

Project/Well Name: Hardy 16-21 #2H

Operator: Kraken Operating LLC

Location: SE SW Section 9 T25N R59E

County: Richland MT; **Field (or Wildcat):** Wildcat

Proposed Project Date: 4/06/23

I. DESCRIPTION OF ACTION

Triple derrick drilling rig to drill a single lateral horizontal Bakken Formation test, 20,940' MD/10,422' TVD.

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS, OR INDIVIDUALS CONTACTED

Montana Bureau of Mines and Geology, GWIC website (Richland County Wells).

US Fish and Wildlife, Region 6 website

ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA COUNTIES, Richland County

Montana Natural Heritage Program Website (FWP)

Heritage State Rank= S1, S2, S3, T25N R59E

Montana Cadastral Website

Surface Ownership and surface use Section 9 T25N R59E

Montana Department of Natural Resources MEPA Submittal

2. ALTERNATIVES CONSIDERED

No Action Alternative: The proposed well would not be drilled.

Action Alternative: Kraken Operating LLC would have permission to drill the well.

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

3. AIR QUALITY

Long drilling time: No, 5-10 days.

Unusually deep drilling (high horsepower rig): No

Possible H₂S gas production: Potentially in Mississippian formations.

In/near Class I air quality area: No.

Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211. AQB review.

Comments: No special concerns – Triple derrick drilling rig to drill a single lateral horizontal Bakken Formation test, 20,940' MD/10,422' TVD. If there are no gas gathering systems nearby, associated gas can be flared under Board Rule 36.22.1220.

4. WATER QUALITY

Salt/oil based mud: Will drill with oil based invert drilling fluids for the intermediate casing hole.

Horizontal hole will be drilled with saltwater. Surface casing hole will be drilled with freshwater and freshwater mud system, Rule 36.22.100.1

High water table: No.

Surface drainage leads to live water: No, closest drainage is an unnamed ephemeral drainage 7/10 of a mile to the west.

Water well contamination: The closest water well is a 25' deep stockwater well about 2/5 of a mile to the north. A 360' deep industrial well is located about 1/10 of a mile to the east. The surface hole will be drilled with freshwater and freshwater mud to 1,875' and steel surface casing will be run and cemented to surface to protect groundwater.

Porous/permeable soils: No, sandy silty clay soils.

Class I stream drainage: None.

Groundwater vulnerability area: No.

Mitigation:

☐ Lined reserve pit

☒ Adequate surface casing

☐ Berms/dykes, re-routed drainage

☒ Closed mud system

☒ Off-site disposal of solids/liquids (in approved facility)

Other:

Comments: Steel surface casing will be run and cemented to surface to protect ground water. (Rule 36.22.1001).

Comments: Surface hole will be drilled with a freshwater mud system to 1,875'. Steel surface casing will be run to 1,875' and cemented back to surface to protect freshwater zones in adjacent water wells, Rule 36.22.1001. Also, covering Fox Hills aquifer. Adequate surface casing and BOP equipment to prevent problems, (5,000 psi annular and double ram), Rule 36.22.1014.)

5. SOILS/VEGETATION/LAND USE

Vegetation: Cultivated field.

Stream crossings: None anticipated.

High erosion potential: Slight, medium cut of up to 17.1' and a medium fill of up to 16.1', required.

Loss of soil productivity: No, location will be restored after drilling if unproductive.

Unusually large wellsite (Describe dimensions): A large well site 491' X 565' required for three wells.

Damage to improvements: Slight, surface use appears to be mix of cultivated and grass lands.

Conflict with existing land use/values: Slight.

Mitigation

- ☐ Avoid improvements (topographic tolerance)
- ☐ Exception location requested
- ☒ Stockpile topsoil
- ☐ Stream Crossing Permit (other agency review)
- ☐ Reclaim unused part of wellsite if productive
- ☐ Special construction methods to enhance reclamation

Access Road: Access will be over existing CR 140. A new access of 447' will be built into location.

Drilling fluids/solids: Kraken will not be utilizing a drilling pit.

6. HEALTH HAZARDS/NOISE

Proximity to public facilities/residences: No residences within ½ of a mile.

Possibility of H2S: Possibility in Mississippian formations.

Size of rig/length of drilling time: Triple derrick, 5-10 days.

Mitigation:

- ☒ Proper BOP equipment
- ☐ Topographic sound barriers
- ☐ H2S contingency and/or evacuation plan
- ☐ Special equipment/procedures requirements
- ☐ Other:

7. WILDLIFE/RECREATION

Sage Grouse: No.

Proximity to sensitive wildlife areas (DFWP identified): None.

Proximity to recreation sites: None.

Creation of new access to wildlife habitat: No.

Conflict with game range/refuge management: No.

Threatened or endangered Species: Listed threatened or endangered species in Richland County are the Northern Myotis, Piping Plover, Whooping Crane, Yellow-billed Cuckoo, and Pallid Sturgeon. The Montana Natural Heritage Program website lists seven (7) species of concern, Whooping Crane, Northern Redbelly Dace, Iowa Darter, Bobolink, Chestnut-collared Longspur, Loggerhead Shrike, and the Snapping Turtle.

Mitigation:

- ☐ Avoidance (topographic tolerance/exception)
- ☐ Other agency review (DFWP, federal agencies, DNRC Trust Lands)

- ☐ Screening/fencing of pits, drillsite
☐ Other:

Comments: Private cultivated surface lands. There may be species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern is discovered at this location. The Board of Oil & Gas has no jurisdiction over private surface lands. No concerns.

IV. IMPACTS ON THE HUMAN POPULATION

8. HISTORICAL/CULTURAL/PALEONTOLOGICAL

Proximity to known sites:

Mitigation

- ☐ avoidance (topographic tolerance, location exception)
☐ other agency review (SHPO, DNRC Trust Lands, federal agencies)

Other:

9. SOCIAL/ECONOMIC

Substantial effect on tax base

- ☐ Create demand for new governmental services
☐ Population increase or relocation

Comments: No concerns.

IV. SUMMARY

No long term impacts expected. Some short term impacts will occur, but can be mitigated.

I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

**EA Checklist
Prepared By:**

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Title: Chief Field Inspector

Date: 02/16/23